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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,451

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Takashi Kakiuchi

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EXAMINER

WEINSTEIN, LEONARD J

ART UNIT

PAPER NUMBER

3746

MAIL DATE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/531,451	Applicant(s) KAKIUCHI, TAKASHI	
	Examiner Leonard J. Weinstein	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 26 October 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. This office action is in response to the amendment of October 26, 2007. In making the below rejections and/or objections the examiner has considered and addressed each of the applicant's arguments.

2. The examiner acknowledges the amendment made to claim 2.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4, 6, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Kessler 4,406,590. Kessler teaches all the limitations as claimed for a hermetic compressor including: an electric motor element 46, a compression element 77 driven by the electric motor element 46, a closed container 27 accommodating the electric motor element 46 and compression element 77, and a refrigerant contained in the closed container 27, the compression element 77 comprising, a shaft (fig. 2) having an eccentric shaft body 190 and a main shaft body 60, a cylinder block 77 having a compression chamber 76, a piston 84 moving reciprocally in the compression chamber 76, connecting means 198 for connecting the piston 84 and the eccentric shaft body 190, and a balance weight 234 formed on the shaft (fig. 2) , wherein the piston 84 is positioned on a horizontal extension 192 of the balance weight 234, and wherein the balance weight 234 is formed in such a shape that the distance between the outer circumference of the balance weight 234 and the piston 84 is substantially constant in the

closely approaching interval of the balance weight 234 and piston 84 as shown in figure 11; and a subsidiary shaft body 184 formed coaxially with the main shaft body 60, and a subsidiary bearing, element 188 of element 64, for supporting the subsidiary shaft body 184, wherein the balance weight 234 is provided at the end of the eccentric shaft body 190 side of the subsidiary shaft body 184.

Further with respect to claim 2 Kessler teaches a hermetic compressor wherein the axial center of the main shaft body is taken to be the origin; x-coordinate and y-coordinate of outer circumference of the balance weight can substantially be expressed as follows:

$$x = [s \cdot \cos(360^\circ - \theta) + L \cdot \cos\{(\sin^{-1}(s \cdot \sin(360^\circ - \theta) / L) + C - \alpha) \cdot \cos(360^\circ - \theta)$$
$$y = [s \cdot \sin(360^\circ - \theta) + L \cdot \sin\{(\sin^{-1}(s \cdot \sin(360^\circ - \theta) / L) + C - \alpha) \cdot \sin(360^\circ - \theta)$$

- **Where  $s$  is the distance between axial center of main shaft body and axial center of eccentric shaft body,**
- **$L$ , pitch length of connecting means,**
- **$C$ , skirt length of piston,**
- **$\alpha$ , distance between outer circumference of balance weight and piston**
- **$\theta$ , rotation angle of eccentric shaft body**

Kessler teaches all the limitations including a hermetic compressor having elements arranged in a configuration as discussed in claim 1. Since Kessler teaches the same configuration and the elements as discussed have the same spatial relationship as the instant application, a value for each the variables listed in the x and y coordinate expressions can be

determined. Therefore the x and y coordinates of the outer circumference of the balance weight of Kessler (234) can be expressed by the equations as discussed.

Further with respect to claims 4 and 10 the recitation of a balance weight formed by either sinter alloy or press processing of iron plate is considered to be a product-by-process and is not patentable over the balance weight (234) of Kessler. The determination of patentability in a product-by-process claim is based on the product itself, even though the claim may be limited and defined by the process. That is, the product in such a claim is unpatentable if it is the same as or obvious from the product of the prior art, even if the prior product was made by a different process. In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir. 1985). A product-by-process limitation adds no patentable distinction to the claim, and is unpatentable if the claimed product is the same as a product of the prior art.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler 4,406,590. Kessler discloses the general conditions of the claimed invention except for the express disclosure of a distance between an outer circumference of a balance weight and a piston is 2 mm or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the distance between outer circumference of a balance weight and a piston 2 mm or less, since the claimed values are merely an optimum or workable range. It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.
8. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler in view of Nozaki et al. US2004/0057859. Kessler teaches all the limitations as discussed but fails to teach the limitation that is taught by Nozaki for a hermetic compressor (fig. 1) wherein the refrigerant is R600a (Nozaki - ¶ 0030). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a natural refrigerant such as isobutene (R600a) as the refrigerant in a hermetic compressor in order to reduce the global warming impacts of the operation of the hermetic compressor (Nozaki - ¶ 0002).
9. Claims 7-8 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kessler in view of Hayashi et al. 5,506,486. Kessler teaches all the limitations as discussed but fails to teach the following limitations that are taught by Hayashi for a hermetic compressor including: an electric motor element 1 driven by an inverter 40 at plural operating frequencies, as shown in figure 13 wherein the solid line shows a relationship between a range of operating

frequencies and corresponding operating efficiency of the compressor, including at least an operating frequency of less than the power source frequency (col. 3 ll. 31-35) and at least an operating frequency of less than 30 Hz (fig. 13). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide an inverter to drive a motor of a compressor and operate a compressor at a frequency less than a power frequency in order to reduce electric power consumption (Hayashi – col. 59-62).

### ***Response to Arguments***

10. Applicant's arguments filed October 26, 2007 have been fully considered but they are not persuasive.

11. With reference to claim 1 the applicant argues that Kessler does not teach or suggest a balance weight that has an outer circumference that is a substantially constant distance from a piston upon an interval when a piston is approaching. The applicant argues that Kessler does not teach or suggest a balance weight rotated upon its axis. The applicant also argues that when a distance between an axial center of a main shaft body and an axial center of an eccentric shaft body is equal to zero, such as the case when balance weight an arc of a complete circle, a coordinate (x, y) cannot be represented by the equations as disclosed. The applicant argues that Kessler fails to teach a balance weight having a shape with a smaller curvature than an arc of a complete circle.

12. In response to applicant's argument that Kessler fails to teach a balance weight that has an outer circumference that is a substantially constant distance from a piston upon an interval when a piston is approaching, the examiner disagrees. The examiner notes that the limitations do not clearly define ~~a~~ either a period of time, portion of an eccentric shaft rotation, or portion of a piston's linear motion (specifically a portion of an approaching motion), for which a

distance between a balance weight and a piston is constant. The limitations as claimed are sufficiently broad to encompass two bodies having a distance between them held constant for any duration of time. It is also noted that in such an arrangement for compressor if one desired to increase the a period of time, portion of an eccentric shaft rotation, or portion of a piston's linear motion (specifically a portion of an approaching motion), for which a distance between a balance weight and a piston is constant a change to the shape, such as an increase in size, of the balance weight and/or piston would be an obvious modification. Reducing the radius of curvature for balance weight would increase a size of a balance weight. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

13. In response to applicant's argument that Kessler does not teach or suggest a balance weight rotated upon its axis, the examiner points out that the applicant is arguing more than that which is claimed. It is noted that the features upon which applicant relies (i.e., a balance weight rotate about its axis) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See In re Van Geuns, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is further noted by the examiner that it is not clear where in the specification it is disclosed that a balance weight rotates about its own axis. No portion of the disclosure describes a structural relationship between an eccentric shaft body and a balance weight that teaches how a balance weight would be capable of accomplishing the motion which applicant argues. It is clear that balance weight 122 is an extension of a secondary shaft 113, which is coaxial with a main shaft 111, and further that secondary shaft 113 is disposed in a stationary frame forming a chamber and having a bearing surface 119. It is also clear that if a balance weight were to

rotate by itself, this rotation would be about its own axis. However the rotation of the balance weight is caused by the rotation of an eccentric shaft through a joint 114. The figures do not provide conclusive evidence that suggest that a joint between an eccentric shaft and a balance weight, is formed along a central axis which is shared by main shaft 111 and secondary shaft 113 from which a balance weight extends.

14. In response to applicant's argument that when a distance ("s") between an axial center of a main shaft body and an axial center of an eccentric shaft body is equal to zero, such as the case when balance weight an arc of a complete circle, a coordinate (x, y) cannot be represented by the equations as disclosed, the examiner notes that there is no application of this argument regarding Kessler. By applicant's definition of "s", a distance between an axial center of a main shaft body and an axial center of an eccentric shaft body is equal to zero, it can determined this value is a constant for both the instant application and Kessler. Further it is determine that this distance can never be zero referring to Kessler. The examiner notes that it would appear that an arc of a balance weight would render this distance to be variable or in the instance of Kessler, to be zero.

15. In response to applicant's argument that Kessler fails to teach a balance weight having a shape with a smaller curvature than an arc of a complete circle, the examiner points out that the applicant is arguing more than that which is claimed. It is noted that the features upon which applicant relies (i.e., a balance weight rotate about its axis) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Further as discussed about changing an arc or radius of curvature would amount to a modification constituting a change in the size of a component.

***Conclusion***

16. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonard J. Weinstein whose telephone number is (571) 272-9961. The examiner can normally be reached on Monday - Thursday 7:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Karmer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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LJW

DEVON C. KELLEY  
PATENT EXAMINER

Devon Kelley  
1/7/08